ABSTRACT OF THE DISCLOSURE

An assay chip for investigation the functionality of membrane proteins and their interactions with molecules includes a nanopore array having a plurality of nanopores in a suitable support layer deposited on the nanopore substrate and being a substantially planar support layer having a plurality of nanopores corresponding to the nanopores of the nanopore substrate. The chip includes further a biologically effective layer capable to host at least a non-lipid molecule or functional molecule, deposited on the support layer and covering the plurality of nanopores, resulting in accesible nanopores from both sides of the biologically effective layer for measurement or imaging. The structured support allows generating a biologically effective membrane, such as a lipid bilayer membrane, having high and reliable stability in a manner that its fluidity is sustained in order to keep integrated membrane proteins in the lipid bilayer in its full biological functionality.